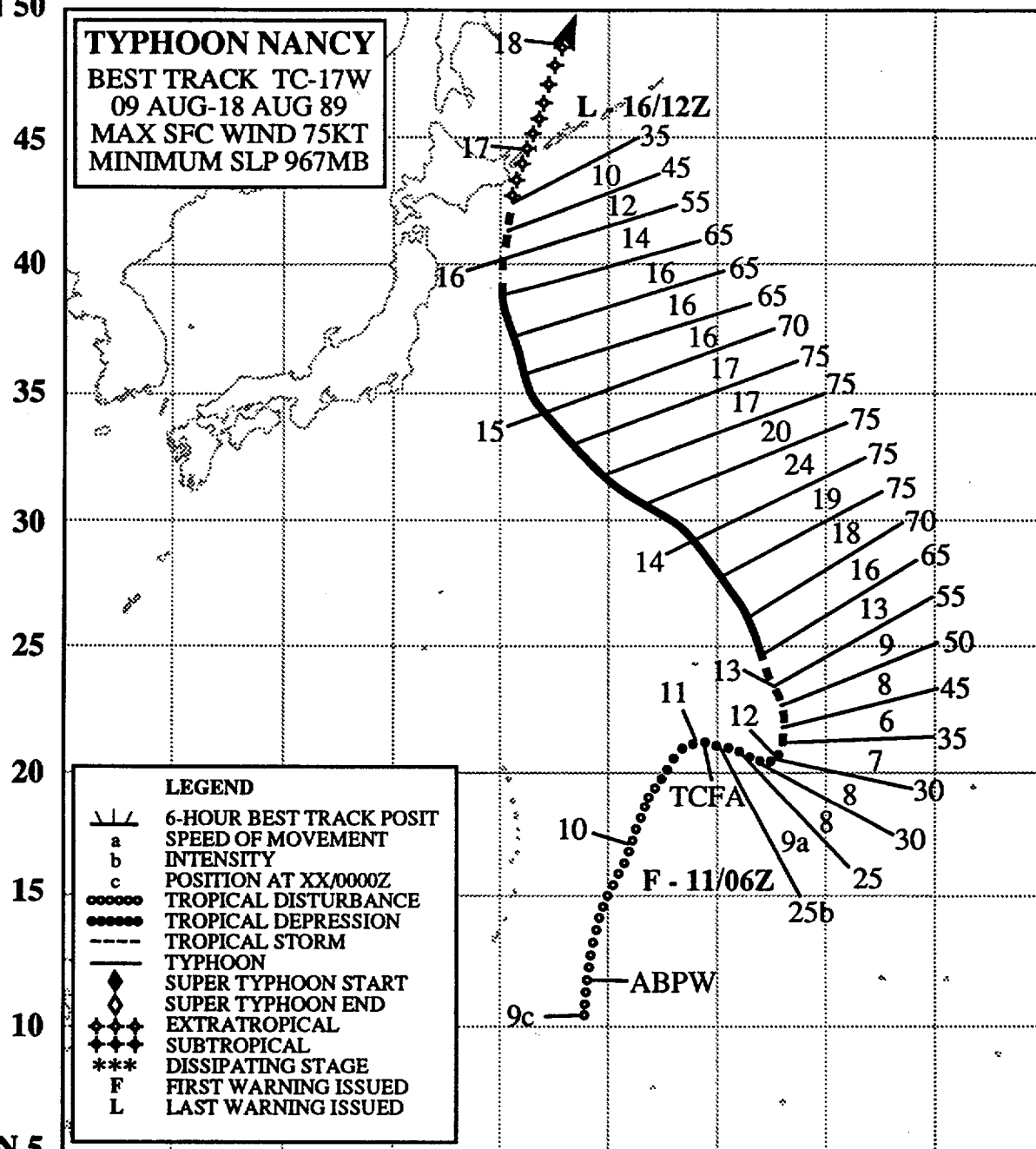


E 125 130 135 140 145 150 155 160 165 170 E  
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**TYPHOON NANCY**  
BEST TRACK TC-17W  
09 AUG-18 AUG 89  
MAX SFC WIND 75KT  
MINIMUM SLP 967MB



## TYPHOON NANCY (17W)

Of the eight August tropical cyclones, Nancy was the third typhoon. It underwent a prolonged binary interaction with Typhoon Owen (16W), tracked rapidly toward Japan, then abruptly turned northward, and finally became extratropical.

The disturbance that eventually became Typhoon Nancy appeared as an area of persistent convection in the monsoon trough. It was first considered as a suspect area on the 9 August Significant Tropical Weather Advisory. The disturbance tracked northeastward in response to surging monsoon southwesterlies. At 110100Z, JTWC issued a Tropical Cyclone Formation Alert based on increased curvature in

the convective bands and a cyclonic tumbling motion of the convection on animated satellite imagery. The first warning for Tropical Depression 17W followed at 110600Z when satellite imagery revealed a developing central dense overcast. At first, JTWC forecast Tropical Depression 17W to make a curve to the north and then track northwestward, as it separated from the monsoon trough and interacted with the subtropical ridge which was building westward. The system did, indeed, follow the forecast, however, only after an unforecast 18-hour jog to the southeast. During this early stage, both Tropical Depressions 17W and 16W competed for low-level inflow and favorable upper-level outflow channels, causing

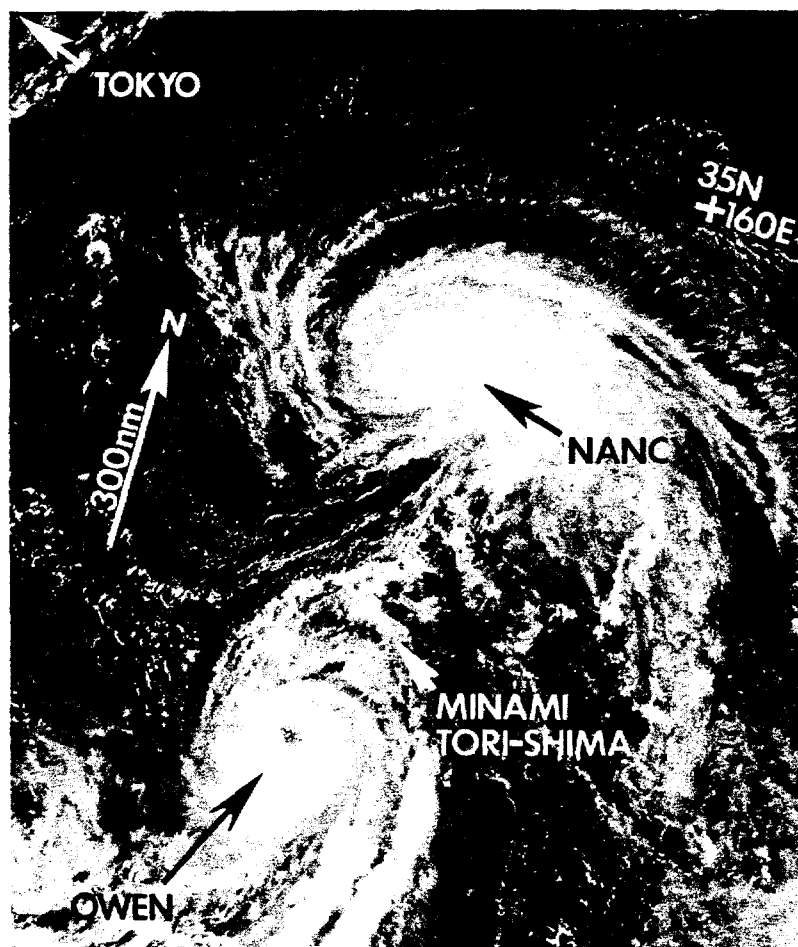


Figure 3-17-1. Typhoons Nancy and Owen (16W) at peak intensity (140313Z August NOAA infrared imagery).

a high degree of uncertainty as to which system would dominate.

As Tropical Depression 17W turned to the north, it was upgraded to Tropical Storm Nancy at 120600Z. Six hours later, Tropical Depression 16W also would become a tropical storm. Then, Nancy broke free of the monsoon trough and began rapid intensification, reaching typhoon intensity within 24 hours of its upgrade to a tropical storm.

JTWC anticipated the possibility of binary interaction with Tropical Depression 16W as soon as Nancy formed. While Tropical Depression 16W intensified, the two systems closed to within 600 nm (1110 km) of each other, and binary interaction became evident when Nancy turned northward. Nancy and Owen (16W) rotated around each other from 120000Z until 150000Z (Figure 3-17-1), an exceptionally long period. The rotation between the two systems about a common

center point totaled 105 degrees. During this time, Nancy accelerated from 6 kt (11 km/hr) on 12 August to 24 kt (44 km/hr) on 14 August in response to the combined effects of increased steering flow and the interaction with Owen (16W). A comparison of both typhoon tracks referenced to the center of motion, or centroid, is shown in Figure 3-17-2. The centroid's track (Figure 3-17-3) during the binary interaction moved east and then turned to the northwest. JTWC used this as a forecast aid for both cyclones, with good results. JTWC propagated the centroid northward, however, results would have been even better had JTWC steered the centroid with the north-northwestward steering flow. At 131800Z, Nancy reached a peak intensity of 75 kt (39 m/sec) and started accelerating towards Tokyo, a track that would reach the metropolis in 24 hours. Based on the expected behavior from the binary interaction, JTWC forecasters projected the cyclone to slow down and veer to the north. Twelve hours later, the forecast motion away from Japan

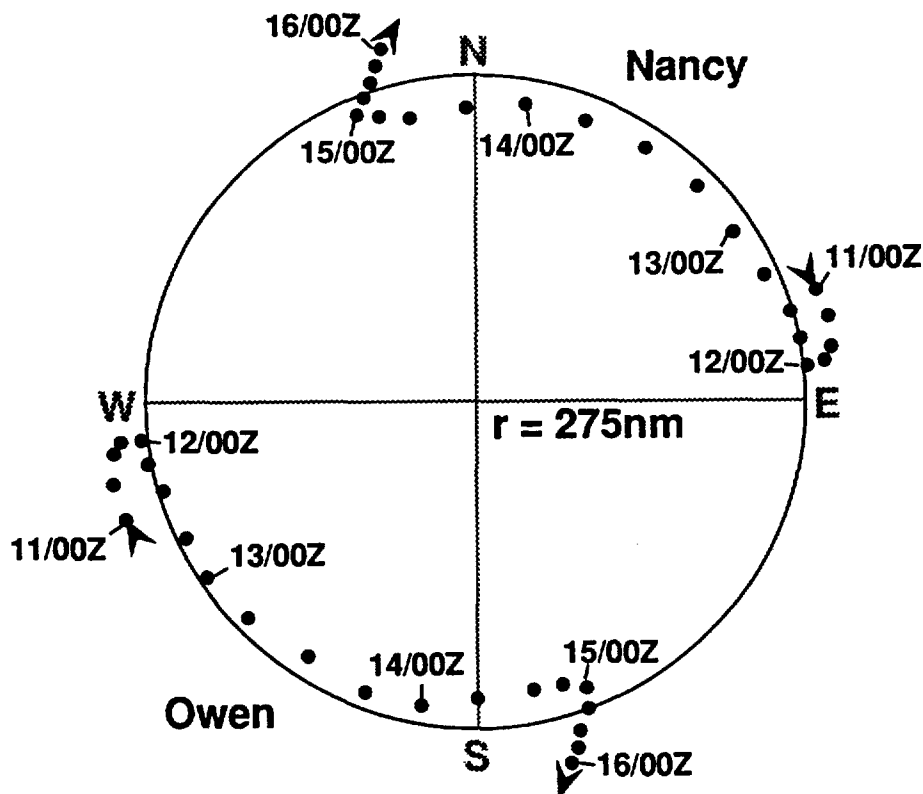


Figure 3-17-2. Tracks of Typhoons Nancy and Owen (16W) relative to their common center. Binary interaction lasted for 72 hours and through 105 degrees of rotation.

materialized. On 15 August, the binary interaction between Nancy and Owen (16W) ended abruptly. There is, to our knowledge, no research that indicates when a binary interaction will cease and the storms will resume independent tracks.

In retrospect, and in light of a similar north-orientated track of Typhoon Mac (15W) two weeks before, there was concern whether Nancy would cross over Japan. But, the NOGAPS prognostic series were quite consistent in moving a trough, which could

induce recurvature, to the east of Japan. The series also built a mid-tropospheric ridge that would stop any further northwest movement over the northern Sea of Japan. At 160000Z, Nancy was moving north of the mid-tropospheric subtropical ridge. It had weakened to tropical storm intensity, and began extratropical transition. Without deep convection to maintain the warm core, the cyclone completed its extratropical transition. The final warning was issued at 161200Z as the low-level circulation center tracked north-northeastward just east of Hokkaido.

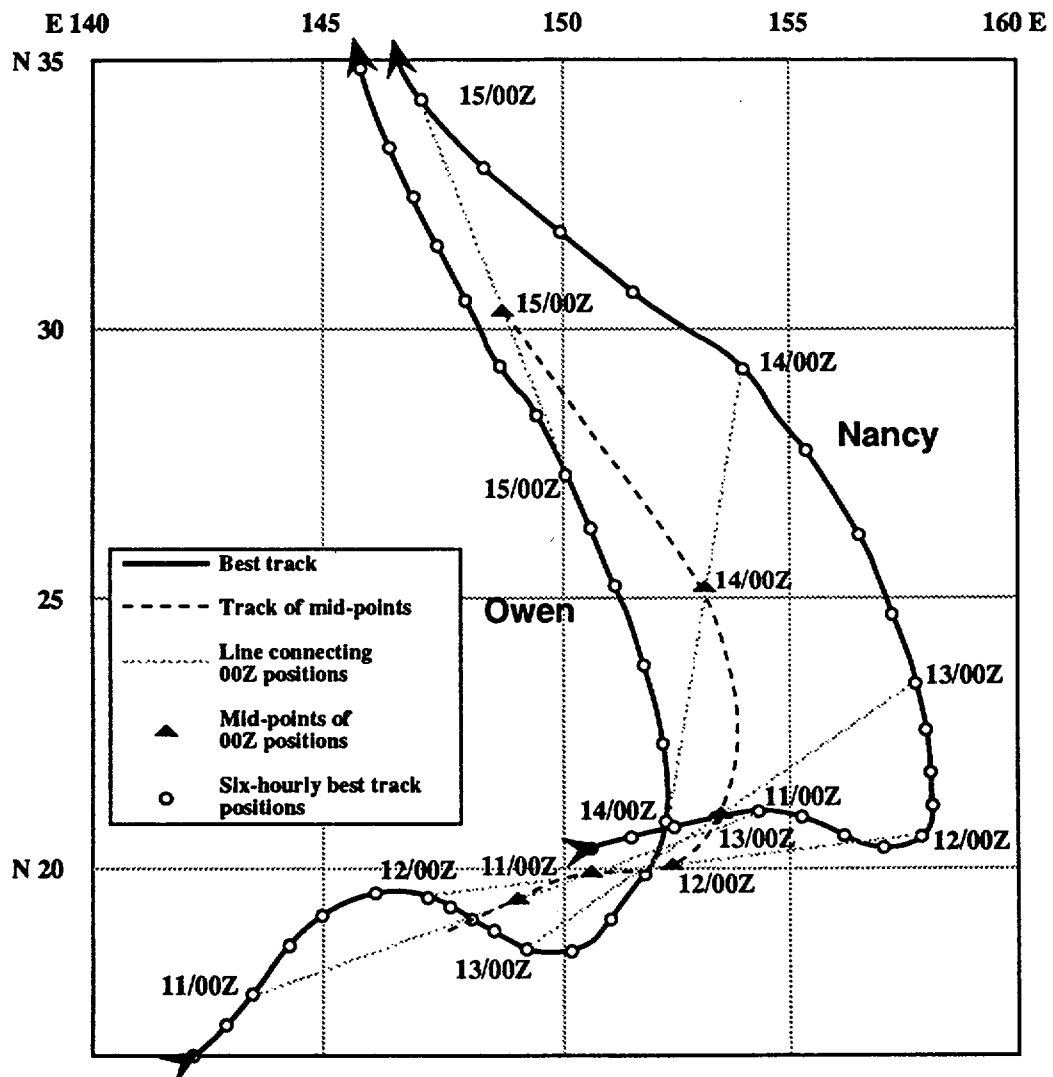


Figure 3-17-3. Path of mid-points between Typhoons Nancy and Owen (16W).